Met Office

NEWS

New climate science programme to meet climate challenge

Author: Grahame Madge
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Climate science will need to continue to be at the heart of policy to mitigate and adapt to climate change, says the Met Office as it announces a new scientific programme.

With the UK hosting the COP26 climate conference in Glasgow at the end of the year, the Met Office is launching a new climate science programme to address some of the key scientific challenges to inform the international climate gathering and beyond.

Albert Klein Tank is the director of the Met Office Hadley Centre, which celebrated its 30th anniversary last year. He said: "With the signing of the Paris Agreement in 2015 and a commitment to reach Net Zero by 2050 – in just 30 years' time - the UK Government's climate science needs are changing. And we are realigning our work programme to address the new landscape.

"In the 30-year arc of Met Office Hadley Centre science there has been a shift from proving that climate change is happening to understanding the nature, magnitude and rate of the change and more detailed information on what these changes mean to individuals and how they can act.

"Preparing for inevitable climate changes in the next 30 years will require more local analysis and even more information on how global warming translates into local-scale changes in weather and climate extremes.

"Further research around stronger mitigation actions is needed to inform climate policy ahead of COP26, ensuring carbon budgets that limit global warming to well below 2.0°C and preferably 1.5°C are put in place."

The new Hadley Centre work program is centred on four questions from Government:

- **Current weather and climate risks and impacts expected globally and in the UK:** How is weather and climate changing in different parts of the world and what is influencing these changes? In the UK, how do these changes vary by region and geography?

- **Future risks and impacts from weather and climate we need to avoid or need to adapt to:** How will weather and climate evolve over the next century in different parts of the world under different emission scenarios? How will climate change affect the duration, location, frequency, and intensity of extreme weather events? What are the risks and

impacts of climate variability and change globally and at the UK scale on a range of timescales?

- **What are the carbon budget and mitigation scenarios that will avoid the most dangerous impacts of global climate change:**
  What global carbon budgets and emission pathways are compatible with different levels of warming (i.e., 1.5°C, 2°C, and higher)? What is the required magnitude and rate of emissions reduction to stay below these levels of warming, and when should net zero emissions be achieved to deliver these? What are the implications of delaying mitigation actions, and what are the consequences of an overshoot in temperatures in terms of physical impacts and potential for irreversible change?

- **Impacts and opportunities from mitigation and adaptation actions to proceed towards a resilient and net zero future? Impacts and opportunities of mitigation and adaptation:**
  What are the physical impacts and related opportunities, trade-offs and co-benefits (e.g. on air quality) of the mitigation and adaptation actions associated with these levels of warming (i.e., 1.5°C, 2.0°C, and higher)?

UK's Energy Minister and International COP26 Champion on Adaptation and Resilience, Anne-Marie Trevelyan, said: "Today's £19.5 million of government investment will propel and mobilise the very best of UK climate science and technology this coming year to help us mitigate and remain resilient to our changing climate.

"This next phase of the Met Office's research into climate science is an essential step to strengthen the UK's position as both a world leader in tackling climate change and as a global science superpower, ensuring credibility as hosts of COP26 later this year."

In April the Met Office announced a multi-million-pound agreement with Microsoft for the provision of the world's most powerful weather and climate forecasting supercomputer. The precision and accuracy of its modelling will help to inform Government policy as part of the UK's fight against climate change and its efforts to reach Net Zero by 2050. This leap forward in technological development will help underpin the Met Office Hadley Centre Climate Programme.

Funded by the Department of Business, Energy and Industrial Strategy (BEIS), but with input from other Government Departments , the Met Office Hadley Centre Climate Programme undertakes scientifically excellent climate change research in collaboration with academic partners in the UK and internationally. Met Office Hadley Centre Climate Programme research also contributes to major international climate science initiatives such as IPCC reports. This research benefits the UK climate science base by providing policy-relevant scientific evidence and advice in the post-Paris context.

Albert Klein Tank concluded: "With a focus on extreme weather in a changing climate and the risks and impacts associated with extreme weather, the ongoing programme will deliver the latest developments in underpinning climate science and its translation into services to improve understanding of the climate system and its behaviour.

"Changes in weather extremes are already being observed and will continue to be seen in a warming climate. Linking up adaptation and mitigation research to inform "resilient" future pathways forms a key element of the programme."

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